The Mk 15 Destroyer-Launched Torpedo: End of an Era

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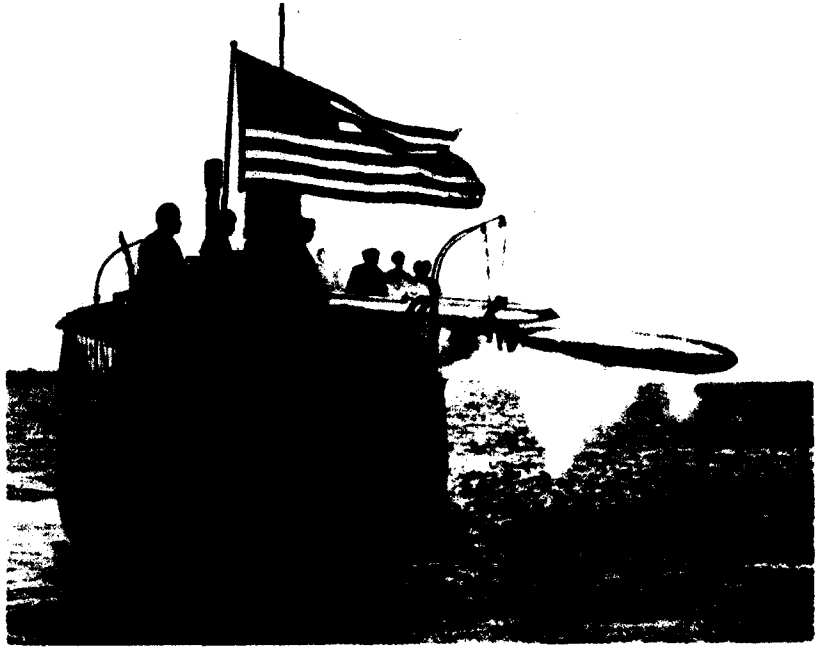


Torpedo practice at Newport, RI—launching a Whitehead torpedo from the torpedo boat *Morris* (TB 14).
Photo from *Scientific American*, March 10, 1900.

The Mk 15 Destroyer-Launched Torpedo: End of an Era

The Mk 15 torpedo, designed and developed by the former Naval Torpedo Station in Newport, Rhode Island, in the 1930s, was the last destroyer-launched antisurface ship weapon to see wide service use. Longer, heavier, and more powerful than its predecessors, it was the Navy's principal destroyer torpedo when World War II began. During the early war years, three new classes of improved Navy destroyers having twin deck mounts of multiple torpedo tubes began entering the fleet. As is recounted in this booklet, salvos of Mk 15 torpedoes launched from those destroyer tubes proved decisive on several occasions in the Pacific campaign.

The Torpedo-Armed Warship Evolves

During the closing decades of the 19th century, the torpedo had a profound impact on the evolution of naval warships and the development of naval tactics. Torpedo tubes were installed on all types of warships, from battleships to small steam launches, and shore-mounted torpedo batteries were even used for harbor defense. Double-hulled ships with extensive compartmentation were developed to protect major fleet units from the torpedo's underwater warhead explosion, and small high-speed boats were built to conduct torpedo attacks against major combatants. In turn, high-speed torpedo-boat chasers were developed

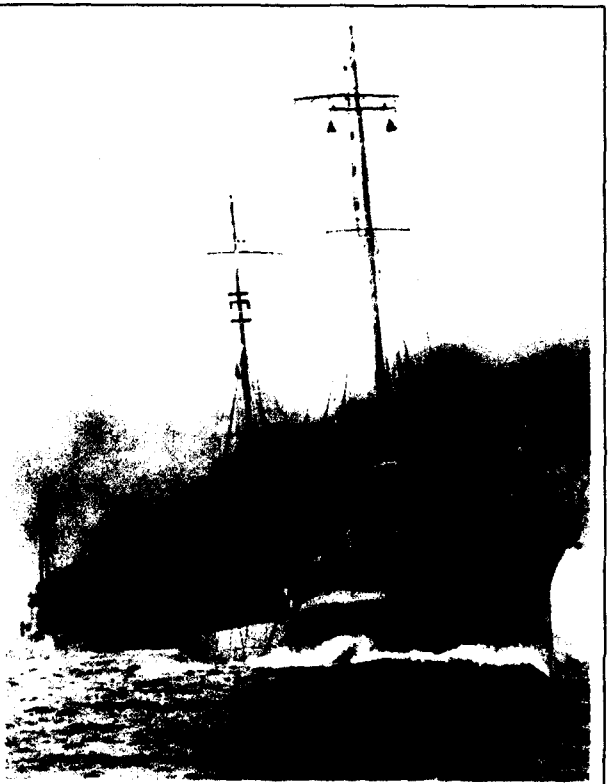
to operate along with the battle fleet in defending against torpedo-boat attacks. By the turn of the century, the best features of the torpedo boats and chasers were combined, providing the design base for a new generation of nimble, multifunctional, torpedo-armed platforms that became known as destroyers.

Destroyers using torpedoes as their primary offensive weapons quickly became the workhorses of the fleet. As an indispensable part of the battle fleets, they provided defense against enemy torpedo attacks and the offensive ability to conduct massed torpedo attacks against the enemy fleet; they were also used as scouts to lay smoke screens and, later, to protect the fleet from submarine attacks.

A major sea battle involving fleets that employed torpedoes and destroyers occurred during the Russo-Japanese war at Tsushima in May 1905. Admiral Togo's Imperial Japanese Fleet annihilated Admiral Rozhestvensky's Second Pacific Squadron in a classic big-gun engagement and, for the first time, torpedoes and destroyers played an important role in a battle. Once the Russian battleline was broken, Admiral Togo aggressively used his destroyers to conduct torpedo attacks against individual warships. At nightfall, the Russians attempted to disengage and escape to Vladivostok, but the Japanese destroyers continued to pursue them and inflicted substantial additional damage. During the battle, more than 370 torpedoes were fired, conclusively demonstrating that torpedo-armed destroyers could be a significant factor in a major fleet engagement.

Early Destroyer-Launched Torpedoes

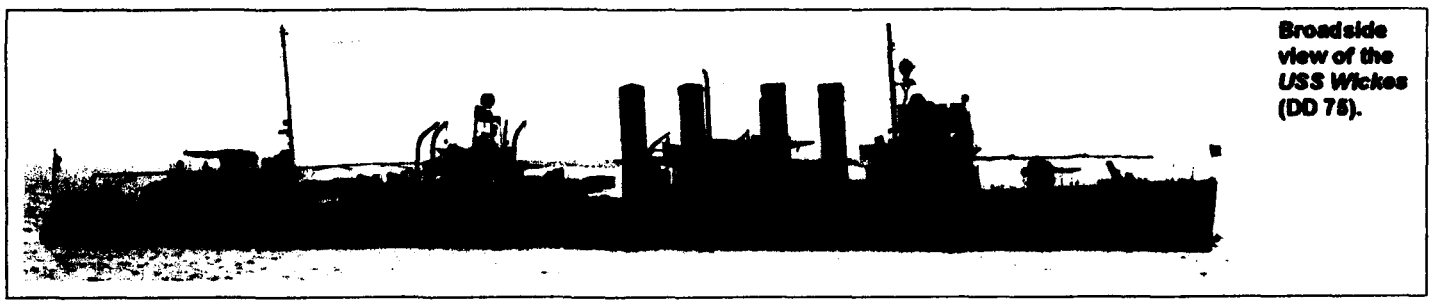
Lessons learned from the battle at Tsushima were absorbed by other major naval powers and, in the years prior to World War I, the British, French, and Germans made improvements to their destroyers and armed them with bigger and better long-range torpedoes. The Bliss-Leavitt Company and the Naval Torpedo Station (NTS) in Newport, Rhode Island, jointly developed a new Mk 8 destroyer-launched torpedo that was 21 inches in diameter by 21 feet long. During World War I, NTS produced Mk 8 torpedoes for the new flush-decked *Wickes*-class and *Clemson*-class destroyers, which were each armed with 12 of the Mk 8 torpedoes in 4 triple-tube mounts.



World War I era torpedo-boat destroyers lay a dense smoke screen to cover maneuvering battleships.

Destroyer-launched torpedoes posed a major threat to the battle fleets. By the eve of World War I, destroyer flotillas were conducting mass torpedo attacks during which up to a hundred torpedoes would be launched against the battleline in a single attack. Theoretically, a complete battleline could be destroyed by a single successful torpedo attack from a destroyer flotilla.

Before World War I, the British and the Germans were involved in a massive naval armament race. When the war started, it was anticipated that the British Grand Fleet and the German Imperial High Seas Fleet would engage in fierce, classic, big-gun fleet duels to achieve sea control in the waters adjacent to Britain. Both the British and the Germans were reluctant to expose their precious fleets to the dangers of these savage open-ocean operations. The Battle of Jutland in May 1916 was the only major sea battle of the war between the British Grand Fleet, supported by 80 destroyers, and the German High Seas Fleet, which included 62 destroyers or large torpedo boats.

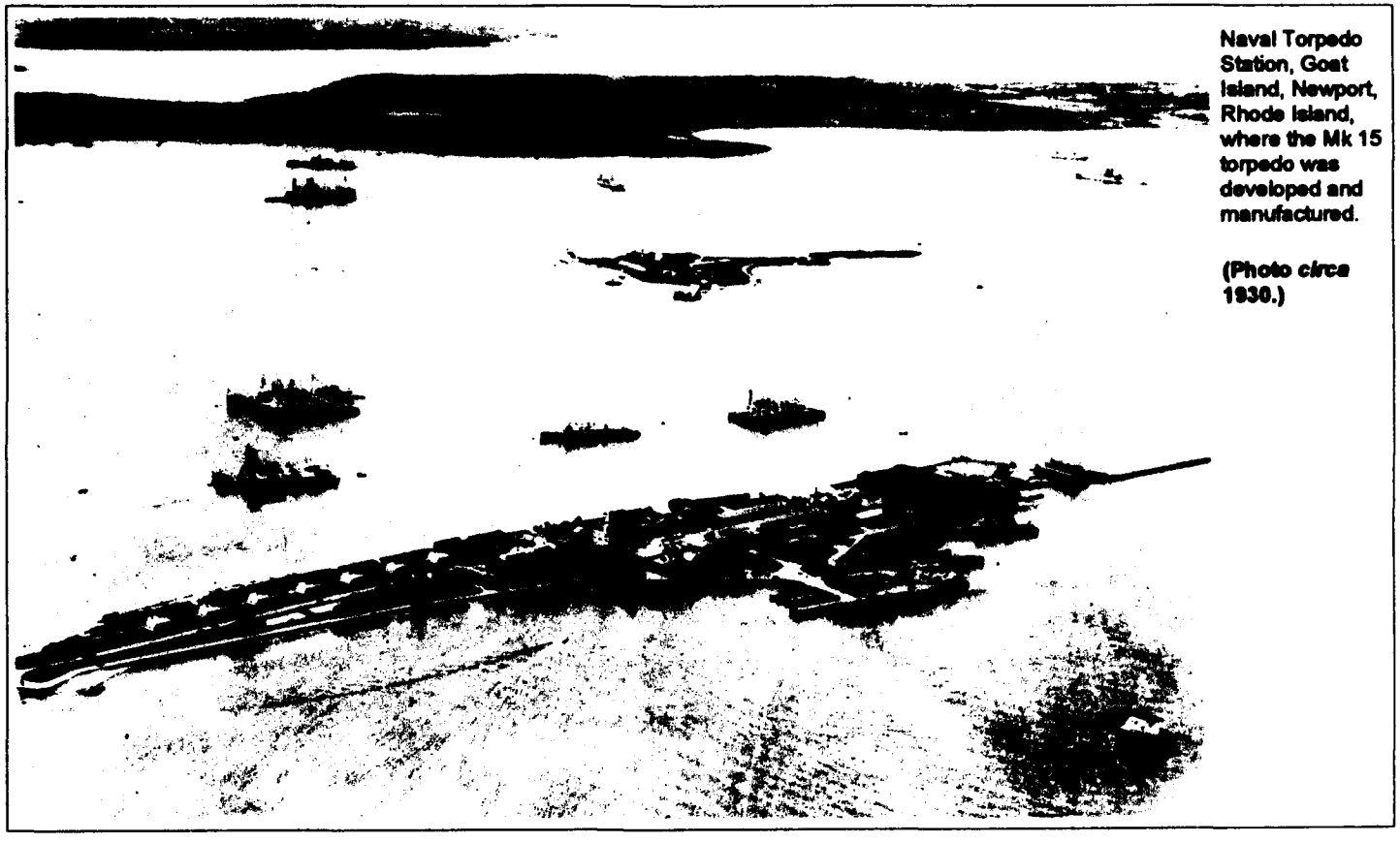


Broadside view of the *USS Wickes* (DD 75).

Jutland did not develop into a big-gun duel between battlelines primarily because the battleships veered away to avoid the multitude of destroyer torpedo attacks. Neither the British nor the German battleline would risk maintaining a sustained big-gun encounter when exposed to these torpedo attacks; consequently, a classic naval confrontation failed to develop, and the Battle of Jutland was inconclusive, clearly demonstrating that a battleline would disengage when subjected to a massed torpedo attack from destroyers. Thus, destroyer-launched torpedoes became a very important consideration in developing fleet doctrine, and they forever changed the classic concept of big-gun battleline engagements.

After World War I, emphasis was placed on developing destroyer-launched torpedoes. The British initiated the development of a new cruiser/destroyer-launched torpedo using oxygen, and the Japanese initiated the development of a large (24-inch-diameter) destroyer-launched torpedo that ultimately evolved into the famous Long Lance (Type 93) torpedo, which was most effective during World War II. During the austere post-war period, the U.S. concentrated on developing destroyer-launched torpedoes. In the early 1920s, the Naval Gun Factory in Washington, DC, and NTS in Newport jointly developed the new 271-inch-long, three-speed (27, 34, and 46 knots) Mk 11 torpedo for use by destroyers and light cruisers. The Mk 12 destroyer-launched torpedo, developed by NTS in the mid-1920s, incorporated numerous subsystem and structural improvements that reduced the damage done to torpedoes during high-speed launches.

The Mk 15 Destroyer-Launched Torpedo



Naval Torpedo Station, Goat Island, Newport, Rhode Island, where the Mk 15 torpedo was developed and manufactured.

(Photo *circa* 1930.)

Development of the Mk 15 Torpedo

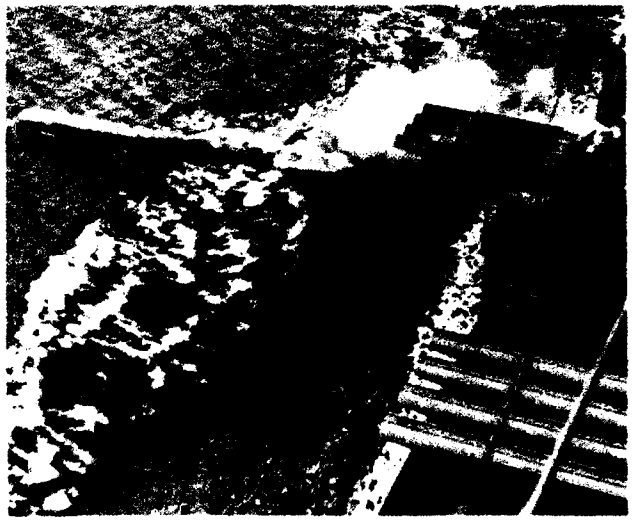
Recognizing the need for new submarine and aircraft torpedoes, the Navy in the early 1930s directed NTS to concurrently develop three new torpedoes: the Mk 13 for use from aircraft, the Mk 14 for submarines, and the Mk 15 for surface vessels. The multispeed Mk 12 destroyer-launched torpedo, which was just entering production, provided a state-of-the-art design base for the new torpedoes. With very limited research and development funding available during the inter-war years ($50,000 to $100,000 per year), it was necessary to use the same subsystem technologies for all three new torpedoes. This frugality caused serious problems early in World War II when complications with the exploder and depth-keeping subsystems seriously limited the new torpedoes' performance.

The Mk 15 torpedo was 17 inches longer than the Mk 12 (288 inches versus 271 inches), which allowed a 300-pound increase in warhead weight. Warhead weight and size were major concerns for destroyer-launched torpedoes that would be used primarily against heavily armored major combatants.

During the early 1930s, NTS developed the Mk 15 torpedo; by the mid-1930s, experimental production units were undergoing fleet evaluation. In this same period, the Vinson shipbuilding program was authorized, and the Navy initiated the development of new destroyers to replace the World War I vintage destroyers. Several new destroyer types (*Porter, Somer, Mahan, Benson, Sims*, etc.) were built, and various types and combinations of torpedo launcher systems (triple, quadruple, and

quintuple-torpedo tube mounts) were evaluated.

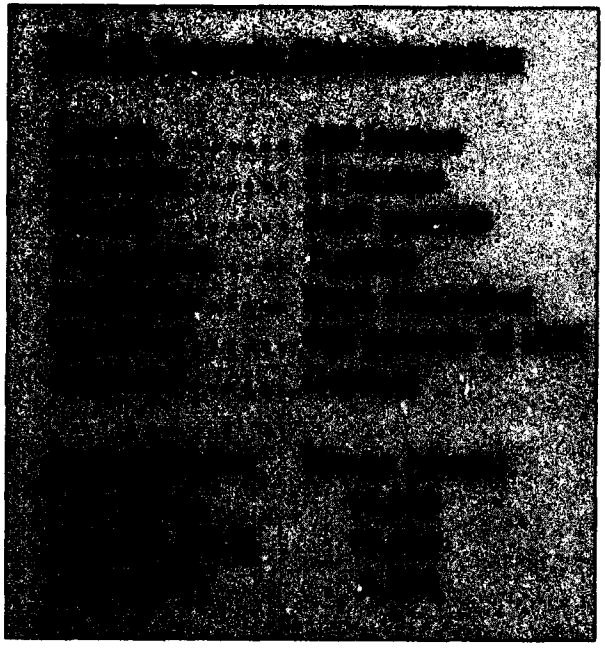
On the eve of World War II, the U.S. Navy selected the new flush-decked *Fletcher*-class (DD 445) destroyer for volume production. The *Fletcher*-class destroyers and the follow-on *Sumner* and *Gearing* classes were equipped with two centerline-mounted quintuple-tube nests and were thus capable of firing 10 torpedoes in a double salvo. *Fletcher*-class destroyers built during the early part of the war, together with the *Sumner* and *Gearing* classes, provided the backbone of the Navy's destroyer force during World War II. When the war started, a crash program was initiated to build a class of smaller destroyer escorts (DEs). Armed with one triple-barrel mount, these vessels were capable of firing a salvo of three Mk 15 torpedoes.



Mk 15 torpedo being launched from a quad-tube nest.

The Mk 15 Destroyer-Launched Torpedo

***USS Fletcher* (DD 445)**



Mk 15 Torpedoes Sink the Tokyo Express

When World War II began, the new destroyers with their quintuple-tube nests using the new Mk 15 torpedoes were just entering the fleet. Early in the war, in spite of serious problems with the warshot configuration of the new Mk 15 torpedo, destroyers played a key role in the fierce sea battles conducted during the Guadalcanal campaign to isolate the Japanese troops on the island. In August of 1943, three destroyers under Commander Frederick Moosbrugger (Destroyer Division 12) effectively used their Mk 15 torpedoes against the famous Tokyo Express, which employed Japanese destroyers in covert night operations to resupply surrounded Japanese troops. In a textbook-perfect operation, Moosbrugger conducted a radar-directed night attack against four Japanese

destroyers loaded with supplies in the Gizo Straits. Three U.S. destroyers fired radar-directed spreads of eight Mk 15 torpedoes at the Japanese Fleet from a range of 4000 yards. The Japanese were caught completely by surprise and the *Kawakaze*, *Arashi*, and *Hagikaze* were destroyed. Only the *Shigure* escaped. (When the *Shigure* was later drydocked, it was discovered that the rudder had a large hole in it inflicted by a Mk 15 torpedo. The lucky *Shigure* was hit by a Mk 15 torpedo with a faulty exploder!)

During this same period, the distinguished performance of Captain Arleigh Burke's Destroyer Squadron 23 provided additional evidence of the contributions made by torpedo-equipped destroyers in blunting the Japanese offensive.

The exploder and depth problems experienced by the warshot-configured Mk 13, Mk 14, and Mk 15 torpedoes early in the war were systematically corrected and, as the war progressed, the reliability and performance of all three torpedoes improved dramatically. However, because there were no large-scale fleet engagements, there were only limited opportunities to use the improved Mk 15 torpedoes.

Battle of Leyte Gulf

Late in the war, during the campaign to retake the Philippines, the Battle of Leyte Gulf—the largest sea battle ever—was fought. When the combined Japanese Fleet sortied to attack U.S. invasion forces, Admiral Nishimara's Southern Task Force was

decimated by torpedo attacks conducted by U.S. Navy destroyers and torpedo boats as they transited the Surigao Straits. Admiral Oldendorf used his destroyers and torpedo boats to ambush Nishimara's force of two battleships, a cruiser, and four destroyers, forcing them to run a torpedo gauntlet as they passed through the narrow straits at night. Oldendorf's battleships massed at the exit of the straits and their murderous concentrated fire forced the surviving Japanese ships to turn tail and attempt to escape by again running the torpedo gauntlet. This last battle, in which most of the ships were sunk by Mk 15 torpedoes, provided a fitting validation of the Mk 15 torpedo's effectiveness. The sole survivor of this torpedo onslaught was the *Shigure*, the same fortunate destroyer that had survived Moosbrugger's torpedo attack in the Gizo Straits.

***USS Halley* (DD 556), a *Fletcher*-class destroyer. The *Fletcher*-class ships could fire a double salvo of 10 Mk 15 torpedoes.**

At the same Battle of Leyte Gulf, Admiral Kurita's Central Force of 2 battleships, 9 cruisers, and 11 destroyers made a high-speed transit of the San Bernardino Straits during the night, and at 0648 hours started shelling Rear Admiral Clinton A. Sprague's Task Group 77.4.3 (Taffy 3), consisting of 6 escort carriers, 4 destroyers, and 3 destroyer escorts that were providing air support for the invasion forces. Sprague launched all available aircraft to attack the Japanese ships, which left his six unarmored escort carriers unprotected, and it appeared disaster was imminent. With a two-to-one speed advantage, the Japanese rapidly closed in on the small thin-skinned carriers, and the big guns were taking their toll. To buy time, Sprague ordered his destroyers and destroyer escorts to lay smoke screens and conduct torpedo attacks against the vastly superior Japanese force.

The fleet was taking a savage mauling from the Japanese battleships; but when the U.S. torpedoes were fired, the Japanese took evasive action. The destroyer *Johnston* made a hit on the cruiser *Kumano*, forcing it and the bomb-damaged *Suzuya* out of the battle. Although the ships and planes had exhausted their torpedoes, simulated torpedo attacks continued against the Japanese, forcing them into constant evasive actions and preventing them from further closing in on the U.S. carriers. American planes then sank two more Japanese cruisers, and Kurita—not realizing that victory was within his grasp—broke off the engagement. Thus, it was once again demonstrated that an enemy battleline would not press home an attack when confronted by aggressive destroyer torpedo fire.

Although the Mk 15 torpedo did not match the performance of Japan's larger, destroyer-launched Long Lance torpedo, once the Mk 15's exploder and depth-keeping problems were solved, it proved to be a reliable and effective weapon. In terms of ships sunk, the Mk 15 torpedo made a substantial contribution in the Pacific campaign; its significant performance during World War II provided a fitting final demonstration of the effectiveness of destroyer-launched torpedoes.

NTS in Newport and the Naval Ordnance Plant in Forest Park, IL, were the principal manufacturing sites for the Mk 15 torpedo. Nearly 11,000 Mk 15s were produced in 4 Mods (0, 1, 2, 3) during World War II, and some 7800 of these were issued to the fleet.

The End of an Era

The Battle of Leyte Gulf marked the end of the Japanese Fleet as an effective fighting force and, as this threat diminished, it marked the beginning of the end for the Mk 15 torpedo in particular and antiship destroyer torpedoes in general. When the Japanese began to employ their *Kamikaze* suicide tactics, air defense became a high priority and destroyer torpedo tube mounts were removed to provide space for additional antiaircraft gun mounts to defend against these attacks. Further, the aircraft carrier radically changed tactical doctrine during World War II, and the projected great-gun duels between opposing battle fleets failed to materialize. The role of the destroyer as the Navy's primary offensive torpedo attack platform was dramatically altered. As the war progressed, it became increasingly apparent that submarines and aircraft were replacing destroyers as the principal torpedo delivery platforms.

In the post-war period, because no imminent threat was posed by large battle fleets, the development of the follow-on Mk 17 destroyer torpedo was terminated. When the post-war fleet rehabilitation and modernization programs were initiated, the destroyer's primary mission shifted to antisubmarine warfare (ASW) and, by the mid-1950s, the remaining Mk 15 torpedoes in the fleet had been replaced by new lightweight ASW homing torpedoes.

Full view of the Mk 15 destroyer-launched torpedo.

Front cover photo:
Model of the Mk 15
destroyer-launched torpedo.

Unless otherwise noted,
all photographs used in this booklet
are official U.S. Navy photographs.

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